

Einführung in die Rechnerarchitektur



Tutorübung 7 Aufgabe 3

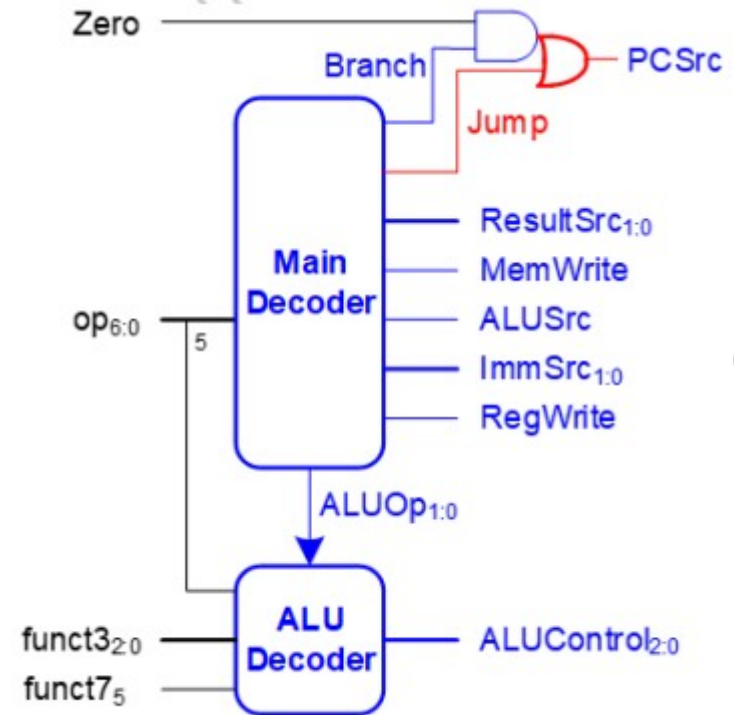
Michael Morandell

28.08.2024

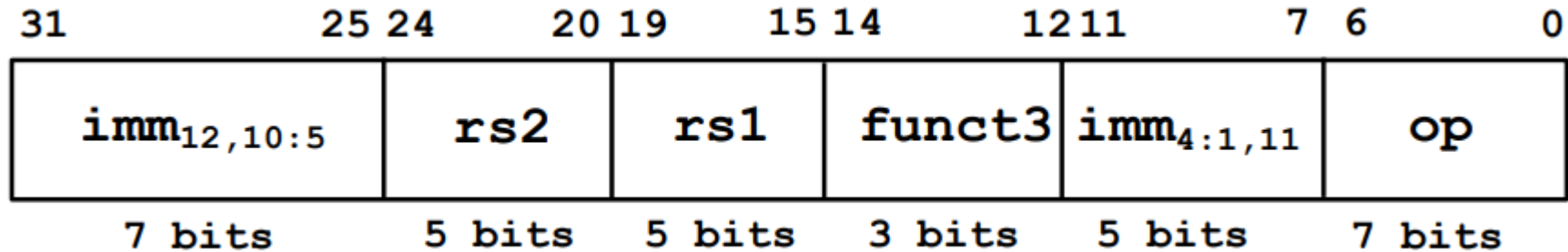


Aufgabenstellung

- Implementierung von Branch Not Equal (BNE)
- Addiert Offset auf PC falls Register ungleich

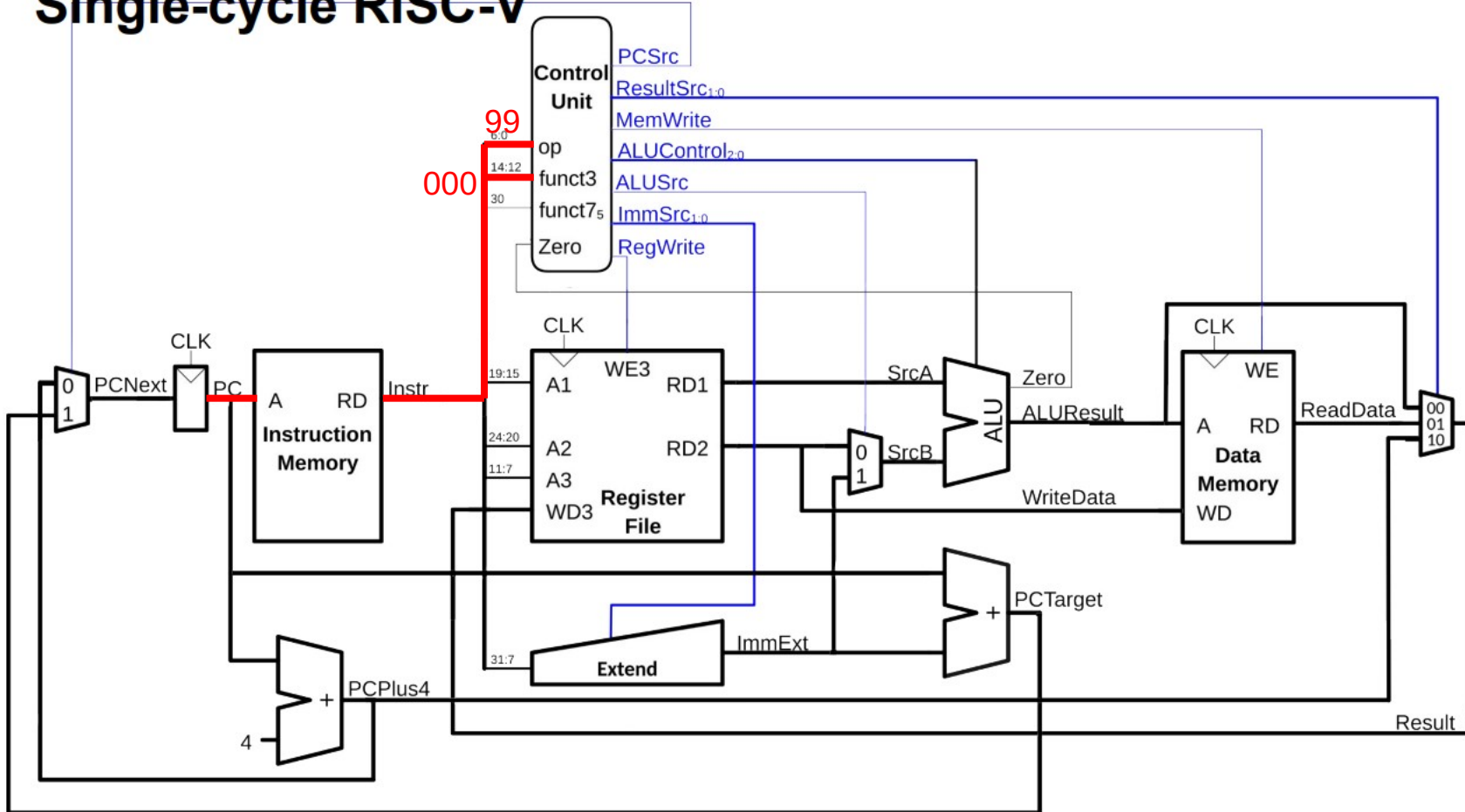


Instruktionsformat B-TYP

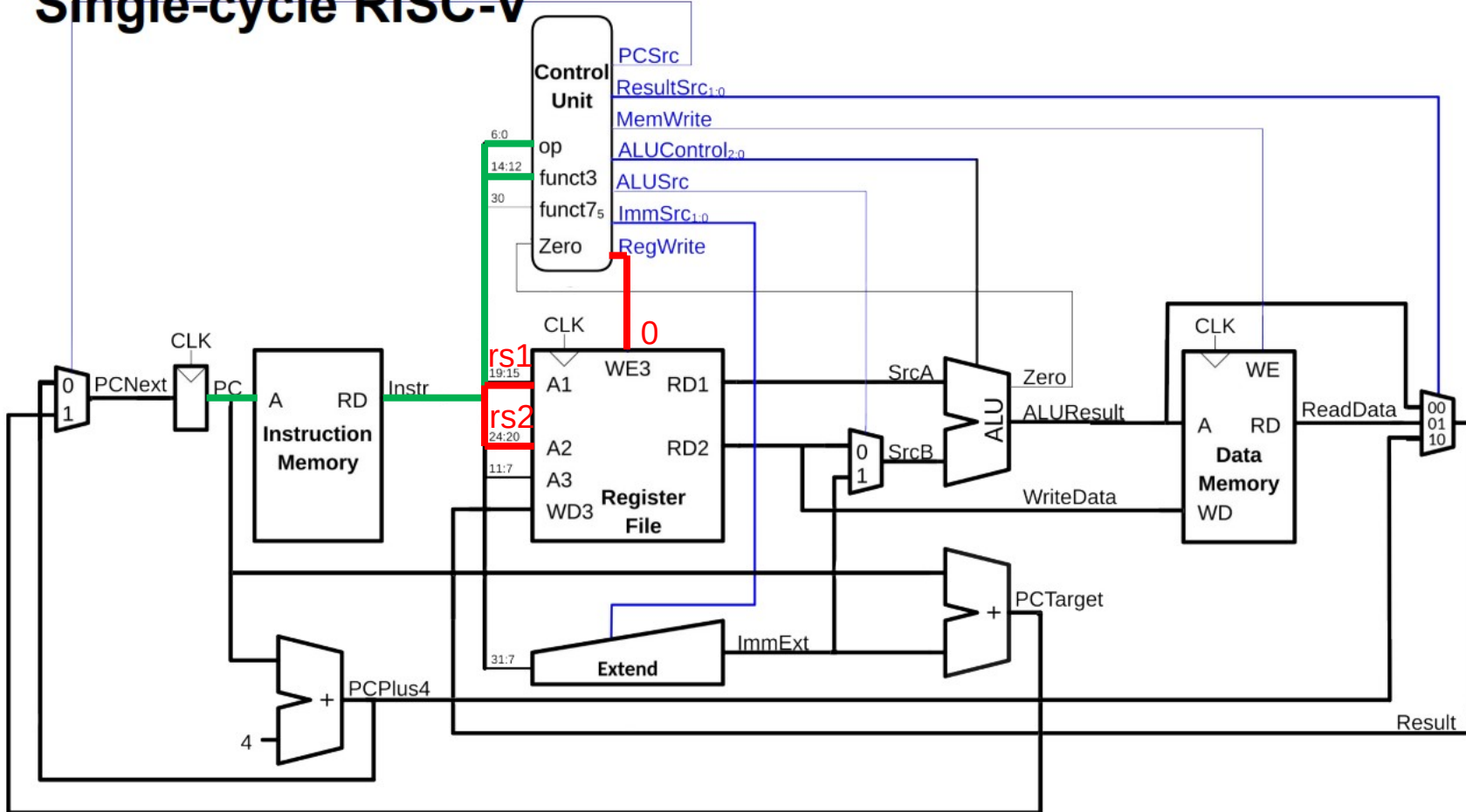


op	funct3	funct7	Type	Instruction	Description	Operation
1100011 (99)	000	-	B	beq rs1, rs2, label	branch if =	if (rs1 == rs2) PC = BTA

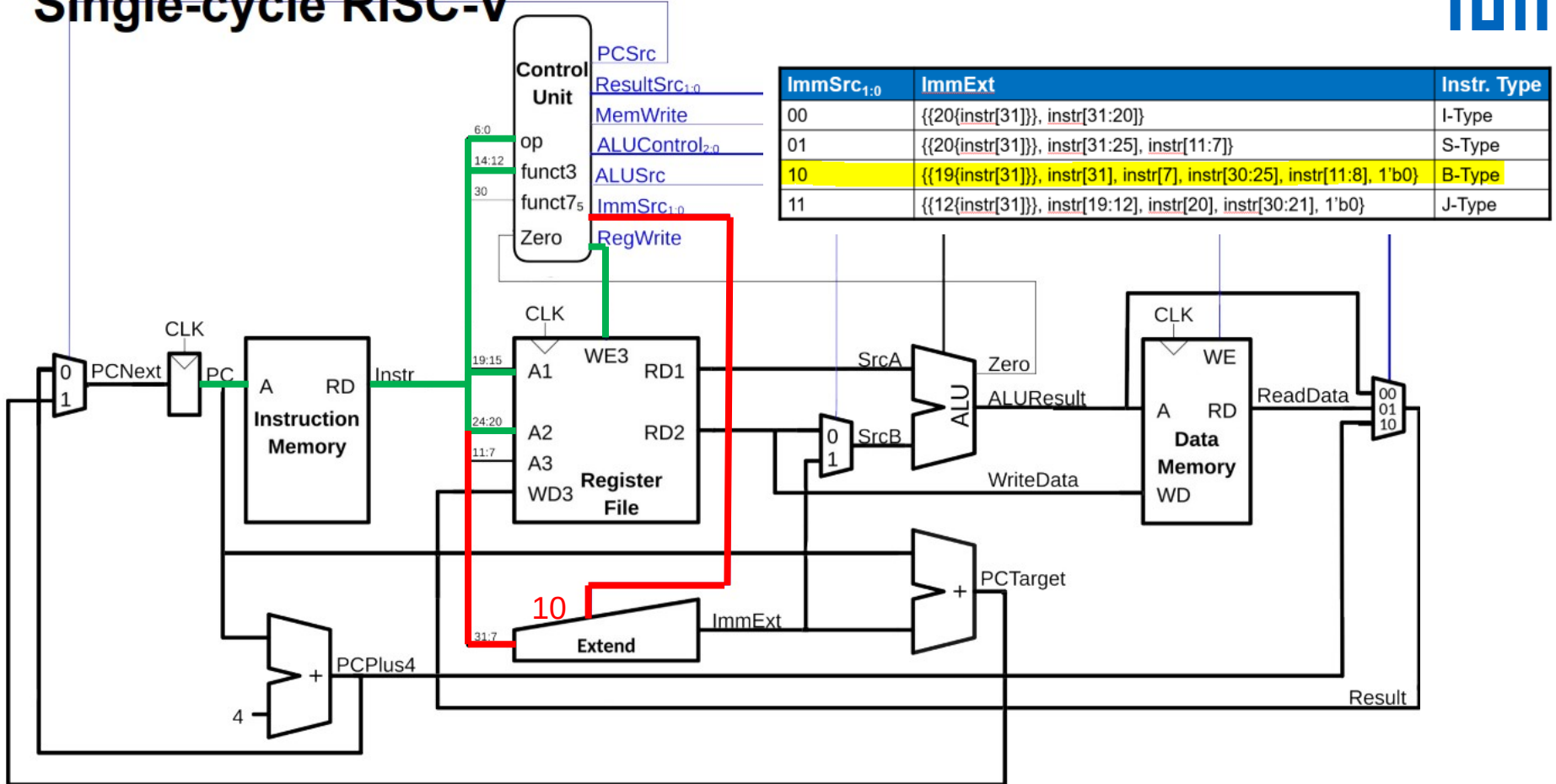
Single-cycle RISC-V



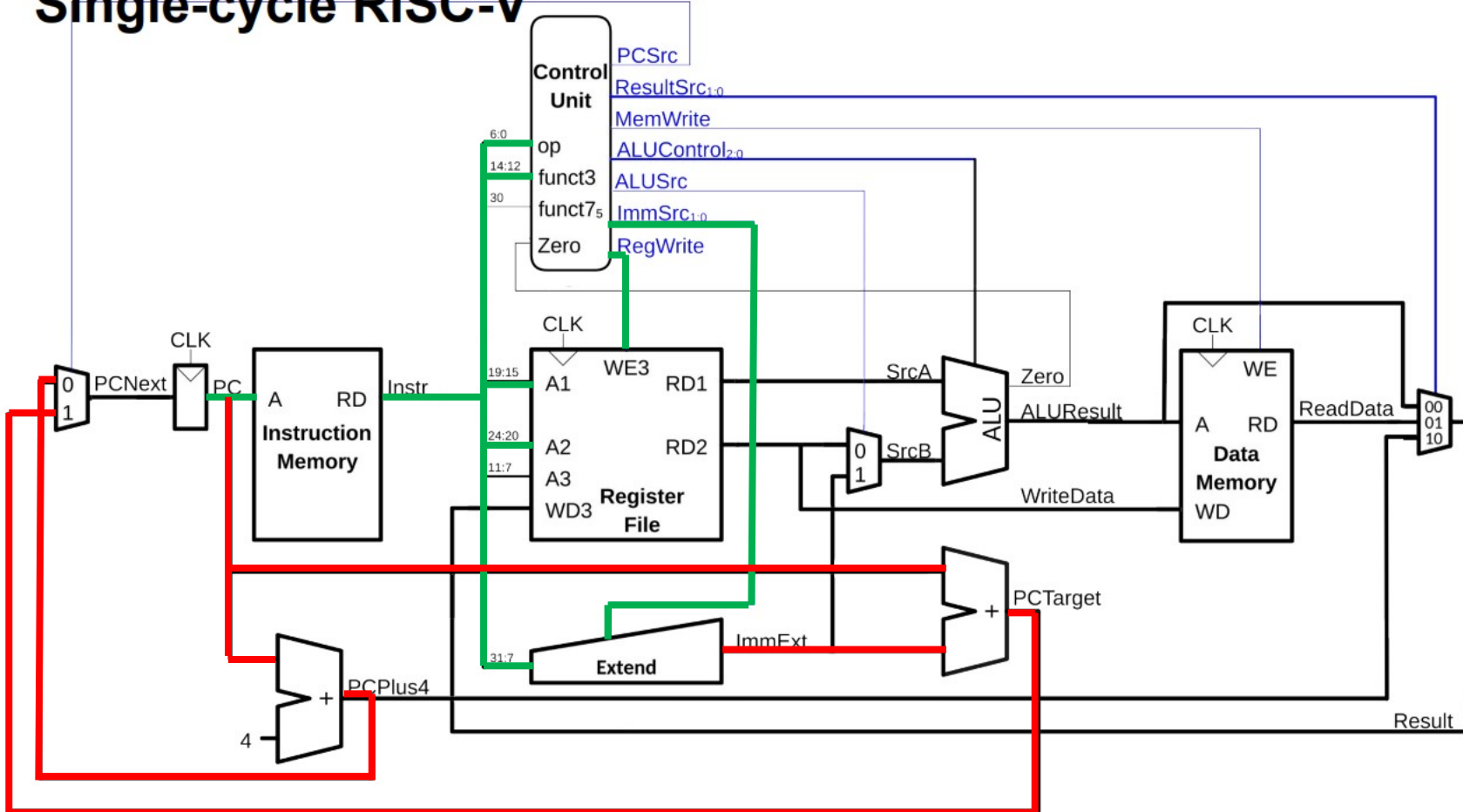
Single-cycle RISC-V



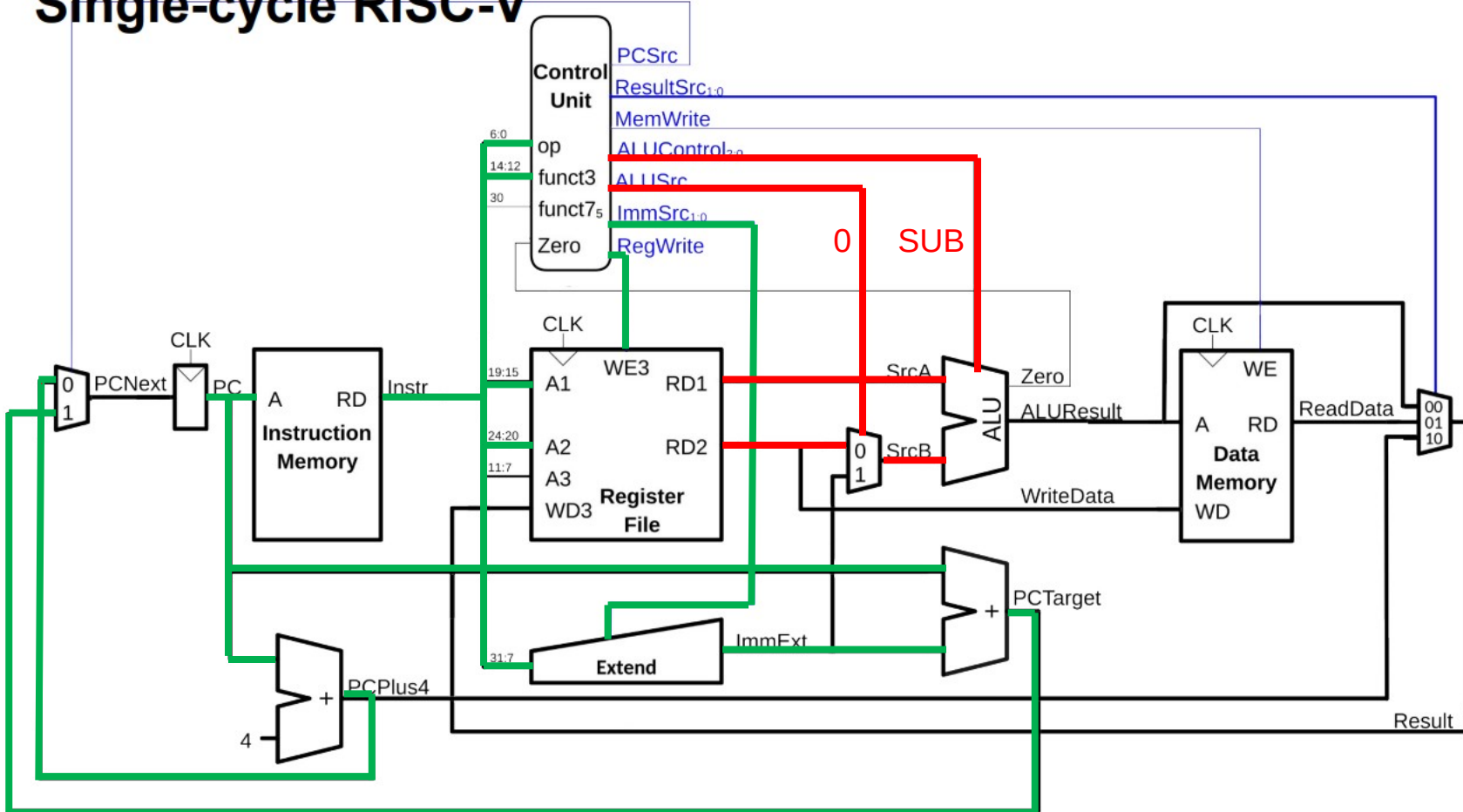
Single-cycle RISC-V



Single-cycle RISC-V



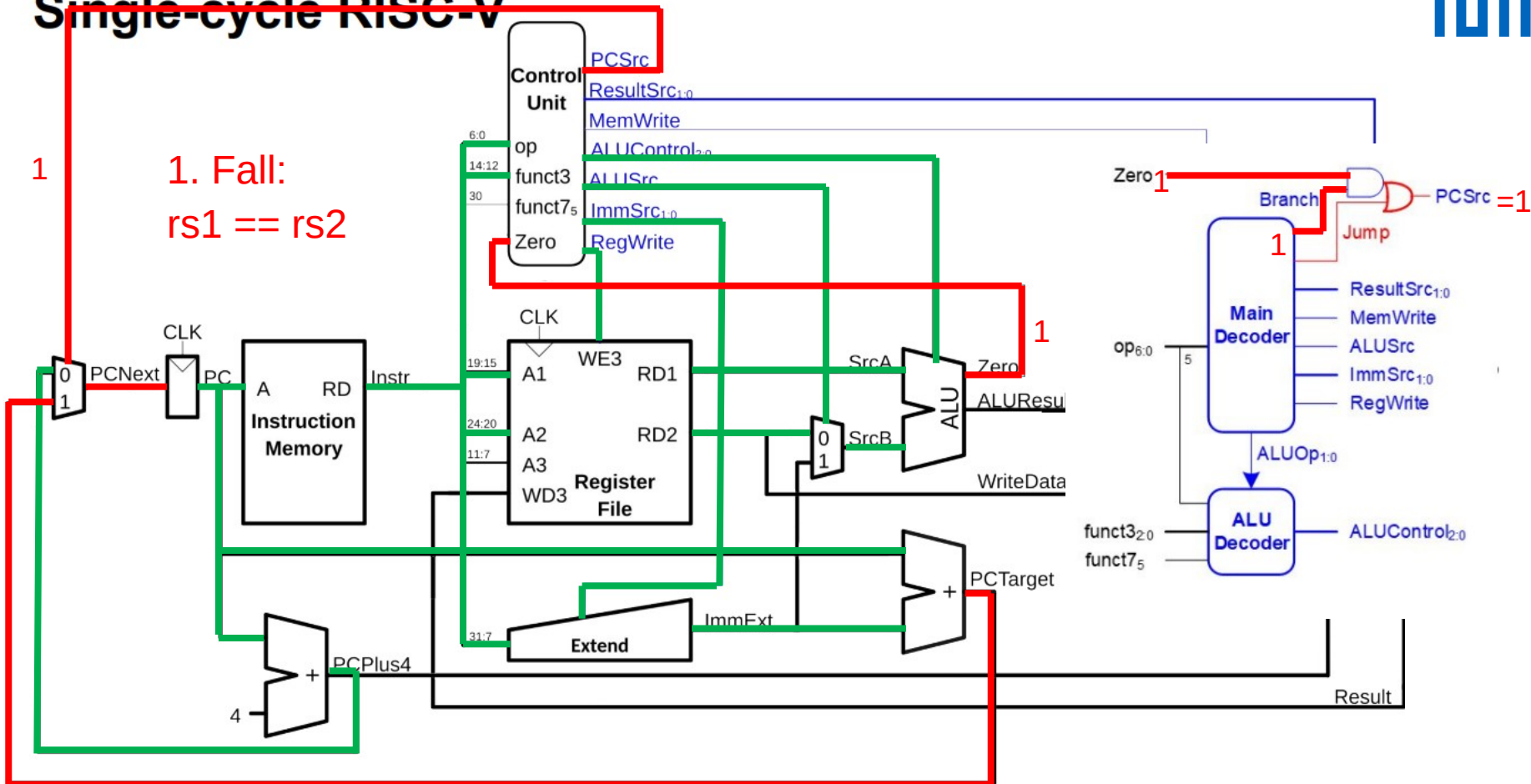
Single-cycle RISC-V



Single-cycle RISC-V

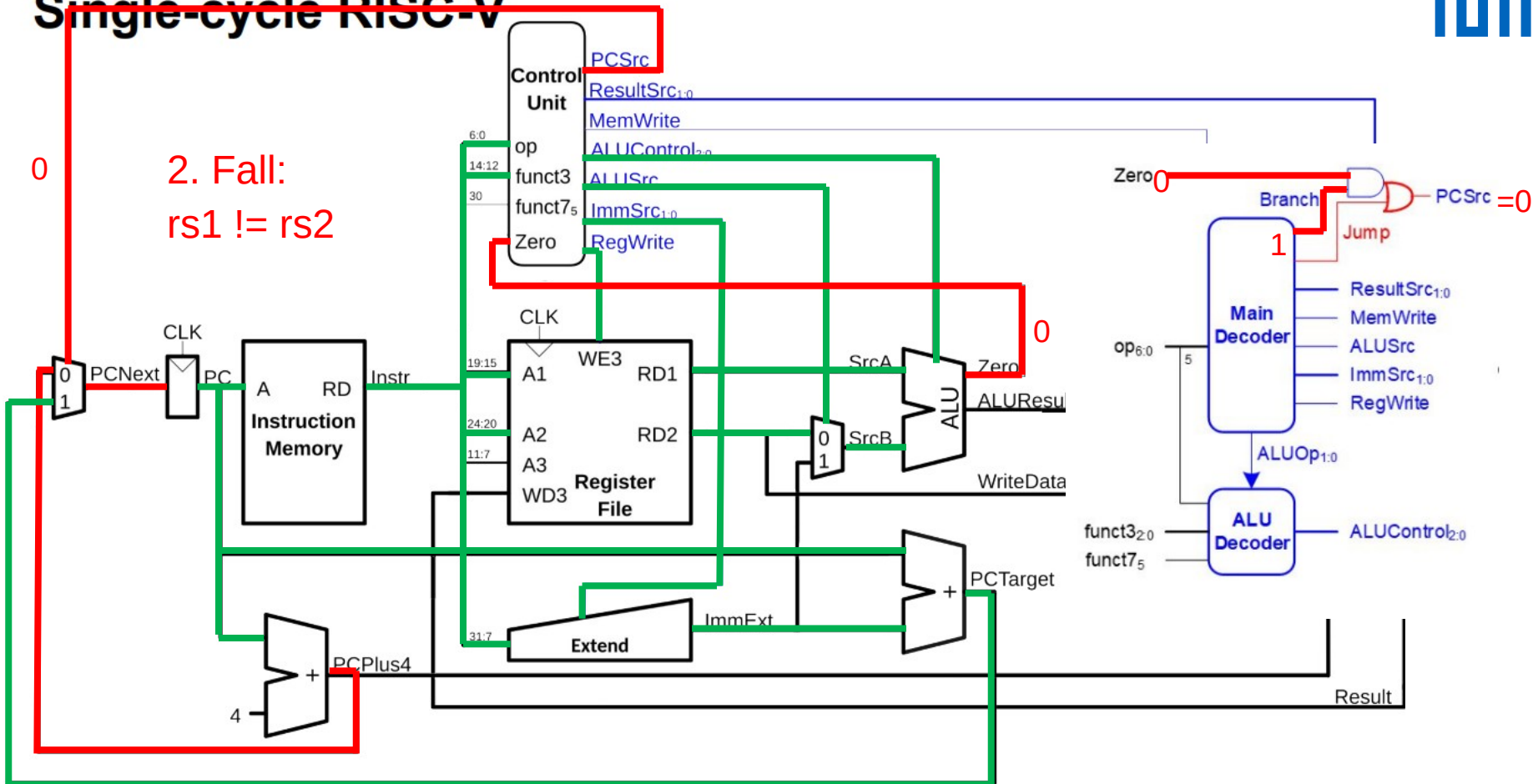
1

1. Fall:
rs1 == rs2



Single-cycle RISC-V

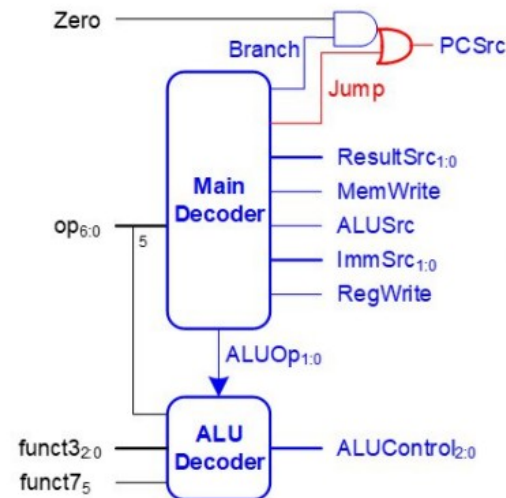
0
2. Fall:
rs1 != rs2



Branch Not Equal (BNE)

op	funct3	funct7	Type	Instruction	Description	Operation
1100011 (99)	000	-	B	beq rs1, rs2, label	branch if =	if (rs1 == rs2) PC = BTA
1100011 (99)	001	-	B	bne rs1, rs2, label	branch if ≠	if (rs1 ≠ rs2) PC = BTA

funct3	Zero	PCSrc
0	0	0
0	1	1
1	0	1
1	1	0



Lösungsvorschlag

